

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Withdrawn): A silicon carbide semiconductor device, comprising:

a first deposition film of low concentration silicon carbide of a first conductivity type formed on a surface of a high concentration silicon carbide substrate of a first conductivity type;

a second deposition film formed on the first deposition film comprising a high concentration gate region of a second conductivity type having a selectively removed first region;

a third deposition film formed on the second deposition film comprising a second region that is wider than the selectively removed first region, a high concentration source region of a first conductivity type and a low concentration gate region of a second conductivity type;

a low concentration base region of a first conductivity type formed in contact with the first deposition film in the first and second regions;

a gate insulation film formed on at least a surface of the third deposition film ;

a gate electrode formed via the gate insulation film;

a drain electrode having a low-resistance contact connection with a backside of the silicon carbide substrate of a first conductivity type; and

a source electrode having a low-resistance contact connection with part of the high concentration source region of a first conductivity type and the low concentration gate region of a second conductivity type.

Claim 2 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein the third deposition film has a thickness within a range of 0.2 μm to 0.7 μm and

wherein the low concentration gate region of a second conductivity type selectively formed in the third deposition film has a portion that is in contact with the gate insulation film and has an impurity concentration higher than $1 \times 10^{15} \text{ cm}^{-3}$ and lower than $5 \times 10^{15} \text{ cm}^{-3}$.

Claim 3 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein the low concentration base region of a first conductivity type has an upper surface having at least a portion thereof in contact with the gate insulation film and provided therein with a cavity.

Claim 4 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein the low concentration base region of a first conductivity type has a lower impurity concentration than the high concentration gate region of a second conductivity type.

Claim 5 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein the low concentration gate region of a second conductivity type selectively formed in the third deposition film has a portion that is in contact with the gate insulation film and has an impurity concentration of not higher than $2 \times 10^{16} \text{ cm}^{-3}$.

Claim 6 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein the low concentration base region of a first conductivity type selectively formed in the third deposition film has a portion that is in contact with the high concentration gate region of a second conductivity type and has an impurity concentration of not higher than $4 \times 10^{16} \text{ cm}^{-3}$.

Claim 7 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein the high concentration gate region of a second conductivity type is the second deposition film of silicon carbide formed on the first deposition film.

Claim 8 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein the gate insulation film formed on the third deposition film has at least a portion thicker than other portions on the low concentration base region of a first conductivity type selectively formed in the third deposition film.

Claim 9 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein above a surface of the base region of a first conductivity type selectively formed in the third deposition film, the gate electrode has at least a portion removed.

Claim 10 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein in terms of crystal Miller index the surface of the silicon carbide substrate of a first conductivity type is a plane that is parallel to a (11-20) plane.

Claim 11 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein in terms of crystal Miller index the surface of the silicon carbide substrate of a first conductivity type is a plane that is parallel to a (000-1) plane.

Claim 12 (Withdrawn): A silicon carbide semiconductor device according to claim 1, wherein the low concentration gate region of a second conductivity type has a portion that is in contact with the gate insulation film and has a buried channel region of a first conductivity type.

Claim 13 (Currently Amended): A silicon carbide semiconductor device, comprising:
a lower deposition film ~~of low concentration silicon carbide~~ which is formed of a single layer of silicon carbide of a first conductivity type, and which has lower impurity concentration than a high concentration silicon carbide substrate of [[the]] a first conductivity type and which is formed on a surface of the substrate of a high concentration silicon carbide substrate of a first conductivity type;

a high concentration gate region of [[a]] second conductivity type ~~selectively formed being more heavily-doped than the lower deposition film and selectively formed in a range from an upper surface of the lower deposition film to an interior in the lower deposition film so that as to have~~ a first region [[of]] in which low concentration silicon carbide of [[a]] the first conductivity type remains in the lower deposition film;

an upper deposition film on the lower deposition film, comprising ~~a low concentration base region of a first conductivity type that is a second region wider than the first region, a high concentration source region of a first conductivity type and a low concentration gate region of a second conductivity type~~ a low concentration gate region of the second conductivity type deposited on a surface of the high concentration gate region of the second conductive type and being doped less than the high concentration gate region; a high concentration source region of the first conductivity type selectively formed on part of an upper surface of the low concentration gate region of the second conductive type and being more heavily doped than the low concentration gate region of the second conductive type; and a low concentration base region of the first conductivity type formed on the first region and having a second region wider than the first region and being doped less than the high concentration source region of the first conductive type;

a gate insulation film formed on at least a surface of the upper deposition film;

a gate electrode formed via the gate insulation film;
a drain electrode having a low-resistance contact connection with a backside of the silicon carbide substrate of a first conductivity type; and
a source electrode having a low-resistance contact connection with part of the high concentration source region of a first conductivity type and the low concentration gate region of a second conductivity type.

Claim 14 (Previously Presented): A silicon carbide semiconductor device according to claim 13, wherein the upper deposition film has a thickness within a range of $0.2\ \mu\text{m}$ to $0.7\ \mu\text{m}$ and wherein the low concentration gate region of a second conductivity type selectively formed in the upper deposition film has a portion that is in contact with the gate insulation film and has an impurity concentration higher than $1 \times 10^{15}\ \text{cm}^{-3}$ and lower than $5 \times 10^{15}\ \text{cm}^{-3}$.

Claim 15 (Previously Presented): A silicon carbide semiconductor device according to claim 13, wherein the low concentration base region of a first conductivity type has a lower impurity concentration than the high concentration gate region of a second conductivity type.

Claim 16 (Previously Presented): A silicon carbide semiconductor device according to claim 13, wherein the low concentration gate region of a second conductivity type selectively formed in the upper deposition film has a portion that is in contact with the gate insulation film and has an impurity concentration of not higher than $2 \times 10^{16}\ \text{cm}^{-3}$.

Claim 17 (Previously Presented): A silicon carbide semiconductor device according to claim 13, wherein the upper deposition film is constituted of silicon carbide.

Claim 18 (Withdrawn): A silicon carbide semiconductor device according to claim 13, wherein the gate insulation film formed on the upper deposition film has at least a portion that is thicker than other portions on the low concentration base region of a first conductivity type selectively formed in the upper deposition film.

Claim 19 (Withdrawn): A silicon carbide semiconductor device according to claim 13, wherein on the surface of the base region of a first conductivity type selectively formed in the upper deposition film, the gate electrode has at least a portion removed.

Claim 20 (Previously Presented): A silicon carbide semiconductor device according to claim 13, wherein in terms of crystal Miller index the surface of the silicon carbide substrate of a first conductivity type is a plane that is parallel to a (11-20) plane.

Claim 21 (Previously Presented): A silicon carbide semiconductor device according to claim 13, wherein in terms of crystal Miller index the surface of the silicon carbide substrate of a first conductivity type is a plane that is parallel to a (000-1) plane.

Claim 22 (Withdrawn): A silicon carbide semiconductor device according to claim 13, wherein the low concentration gate region of a second conductivity type has a portion that is in contact with the gate insulation film and has a buried channel region of a first conductivity type.

Claim 23 (Withdrawn): A method of manufacturing a silicon carbide semiconductor device, comprising:

forming a first deposition film of low concentration silicon carbide of a first conductivity type on a surface of a high concentration silicon carbide substrate of a first conductivity type;

forming on the first deposition film a second deposition film having a first region from which a high concentration region of a second conductivity type has been selectively removed;

forming on the second deposition film and on the selectively removed first region a third deposition film comprised of a low concentration region of a second conductivity type;

selectively forming a second region in the third deposition film that is wider than the first region by forming a low concentration base region of a first conductivity type in the first and second regions in contact with the first deposition film of low concentration silicon carbide of a first conductivity type, and selectively forming a source region constituted of a high concentration of silicon carbide of a first conductivity type in the third deposition film;

forming a gate insulation film on at least the surface of the third deposition film;

forming a gate electrode via the gate insulation film;

forming a drain electrode having a low-resistance contact connection on a backside of the silicon carbide substrate of a first conductivity type; and

forming a source electrode having a low-resistance contact connection with part of the high concentration source region of a first conductivity type and the low concentration gate region of a second conductivity type.

Claim 24 (Withdrawn): A method of manufacturing a silicon carbide semiconductor device according to claim 23, further comprising:

forming the second deposition film on the first deposition film;

forming a trench that extends from the surface of the second deposition film to the first deposition film;

forming the third deposition film on the second deposition film and the trench; and

selectively implanting impurity ions of a first conductivity type to form the low concentration base region of a first conductivity type in the third deposition film.

Claim 25 (Withdrawn): A method of manufacturing a silicon carbide semiconductor device, comprising:

forming a lower deposition film of low concentration silicon carbide of a first conductivity type on a surface of a silicon carbide substrate of a first conductivity type;

forming an impurity region of a second conductivity type in the lower deposition film;

forming an upper deposition film constituting a low concentration gate region of a second conductivity type on the lower deposition film in which the impurity region of a second conductivity type is formed;

forming a high concentration source region of a first conductivity type on the upper deposition film;

forming in the upper deposition film a low concentration base region of a first conductivity type in contact with the lower deposition film;

forming a gate insulation film on at least a surface of the upper deposition film;

forming a gate electrode via the gate insulation film;

forming a drain electrode having a low-resistance contact connection with a backside of the silicon carbide substrate of a first conductivity type; and

forming a source electrode having a low-resistance contact connection with part of the high concentration source region of a first conductivity type and the low concentration gate region of a second conductivity type.

Claim 26 (Withdrawn): A method of manufacturing a silicon carbide semiconductor device according to claim 25, further comprising:

forming the impurity region of a second conductivity type in the lower deposition film of low concentration silicon carbide by implantation of a high concentration of impurity ions of a second conductivity type, and forming the upper deposition film thereon; and

selectively implanting impurity ions of a first conductivity type in the upper deposition film to form the low concentration base region of a first conductivity type.